

**AMENDMENTS TO THE CLAIMS**

1. (Currently Amended) A method for operating a low frequency cryocooler system comprising:

~~(A)~~ generating pulsing gas at a frequency of at least 25 hertz by compressing a gas using a moving element moving proximate a surrounding wall wherein no oil is employed between the moving element and the surrounding wall;

passing the pulsing gas through a discharge frequency modulating volume;

~~(B)~~ passing the pulsing gas through a frequency modulation valve after having passed through the frequency modulating volume and reducing the frequency of the pulsing gas to produce lower frequency pulsing gas; and

~~(C)~~ passing the lower frequency pulsing gas to a regenerator which is in flow communication with a thermal buffer tube.

2. (Original) The method of claim 1 wherein the moving element is a piston driven by an axially reciprocating electromagnetic transducer.

Claim 3. (Cancelled)

4. (Currently Amended) The method of claim ~~3~~ 1 wherein the discharge frequency modulating volume includes a reservoir.

5. (Original) The method of claim 1 wherein the lower frequency pulsing gas has a frequency of less

than 10 hertz.

6. (Currently Amended) A low frequency cryocooler system comprising:

~~(A)~~ a compressor having a discharge and having a moving element proximate a surrounding wall wherein no oil is employed between the moving element and the surrounding wall;

~~(B)~~ a regenerator, a frequency modulation valve, discharge conduit extending from the discharge to the frequency modulation valve, a reservoir positioned on the discharge conduit between the discharge and the frequency modulation valve to comprise a discharge frequency modulating volume and regenerator input/output conduit extending from the frequency modulation valve to the regenerator; and

~~(C)~~ a thermal buffer tube in flow communication with the regenerator.

7. (Original) The low frequency pulse tube system of claim 6 wherein the compressor is a linear compressor and the moving element is a piston driven by an axially reciprocating electromagnetic transducer.

8. (Original) The low frequency pulse tube system of claim 6 wherein the frequency modulation valve is a rotary valve.

9. (Original) The low frequency pulse tube system of claim 8 further comprising suction conduit extending from the rotary valve to the compressor suction.

Claim 10. (Cancelled)

11. (Original) The low frequency pulse tube system of claim 9 further comprising a reservoir positioned on the suction conduit between the rotary valve and the compressor suction to comprise a suction frequency modulating volume.